

CAFS On-Line Orientation

*Montgomery County
Fire & Rescue Service*



Class A Foam Theory



Class A Foam Theory



Foam Terminology

- General Terms

- Foam Concentrate
- Foam Concentrate Injection Rate
(Proportioning Rate)
- Foam Solution
- Finished Foam
- Foam Types



Practical Foam Terminology



Foam Concentrate

(As Purchased From The Manufacturer)

+ Water =



Foam Solution

+ Air & Mechanical Agitation =



Finished Foam

(Air Aspirated Foam Solution)

Foam Terminology

- Mixing & Finishing - where is the air added and where does the agitation occur?
 - At Nozzle = Nozzle Aspirated Foam System (NAFS)
 - At Pump = Compressed Air Foam System (CAFS)



Foam Types



Foams are typed by the fires they are designed to put out.

- Class A Fires need Class A Foam
- Class B Fires need Class B Foam



For CAFS MCFRS will be using Class A Foam only.



You will learn about Class B foam later; for now we will concentrate on Class A foam.

Class A Foams



Ingredients:

Foaming Agent (Creates Bubble Structure)

Wetting Agent or Surfactant (Decreases Surface Tension of Water)

Emulsifying Agent (Breaks down Molecules containing Carbon (example - Charred wood) “oleophilic”)



Class A Foams

Class A Foams have different proportioning rates depending upon the application the agent is being used for :

Normal Range - 0.1% (one-tenth of 1 percent) up to 1.0%

This means that using a 0.5% (five-tenths of 1 percent) Class A foam concentrate proportioning rate will use 5 gallons of concentrate for every 995 gallons of water.

Nozzle Aspirated Foam

0.3% - low expansion, 1.0% high expansion

Compressed Air Foam

0.3% - “Wet”, 1.0% - “Dry”



How do I Make CAFS

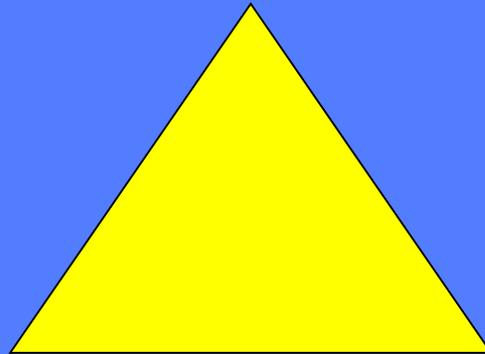
- There are a variety of ways to power the components, but all CAFS systems have three basic systems which must work together.



CAFS Triangle

These are the components that work together to make CAFS.

Air Compressor



Foam Pump

Water Pump



Advantages of CAFS



- Increased penetration (high energy)
- Increased “soaking” ability
- Clings to vertical surfaces
- Lighter hose lines



More efficiently uses water



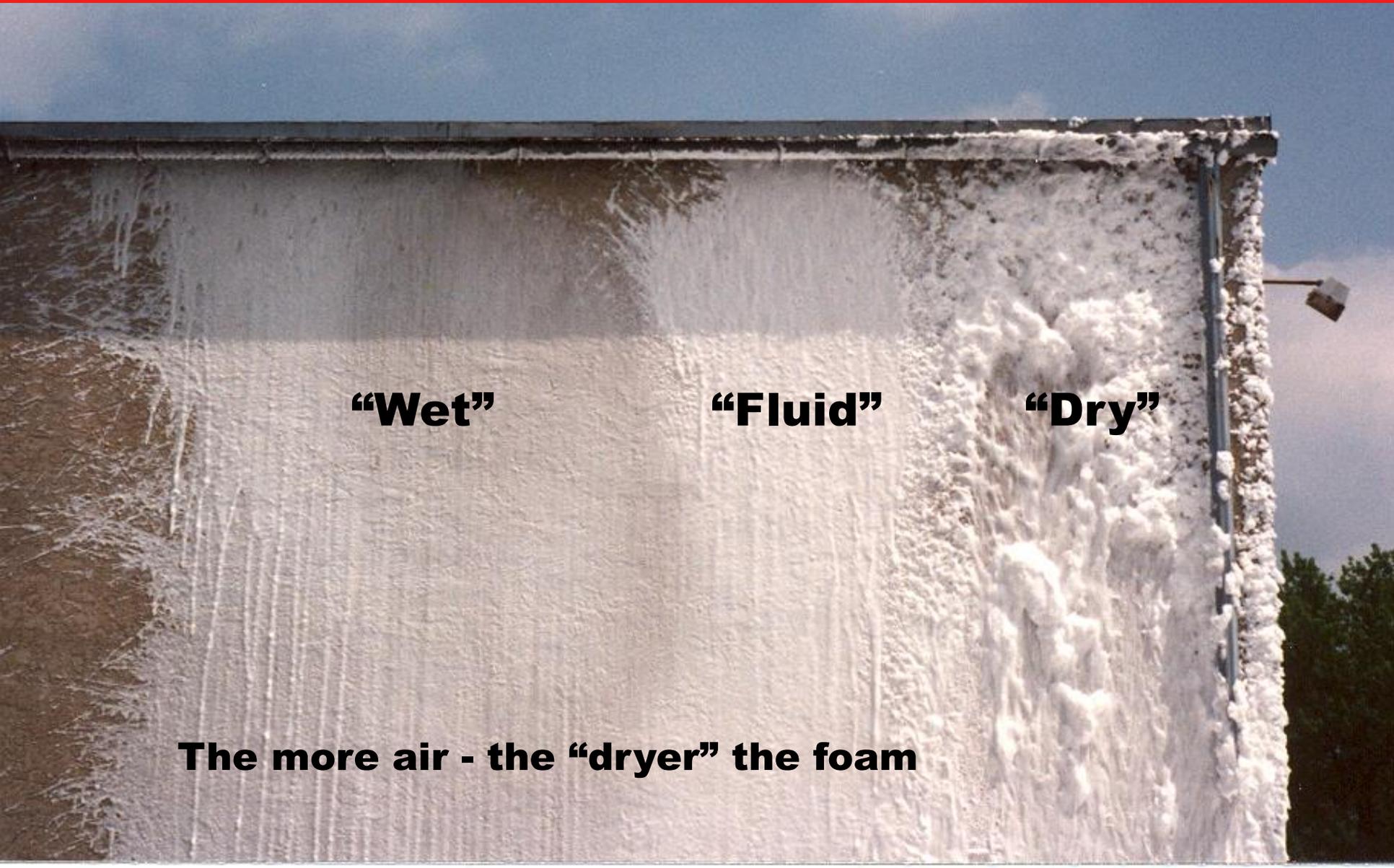
Wet vs. Dry



- Refers to proportion of air to water
 - The more air, the dryer it is
- Can also be affected by “richness” of foam mixture
 - If you add more foam concentrate, the finished foam will be dryer. At full dryness, the foam concentrate proportion automatically gets kicked up to 1%.



Wet to Dry - Controlled by amount of air



“Wet”

“Fluid”

“Dry”

The more air - the “drier” the foam

Review Questions

- List what the following ingredients of Class A Foam do and explain why they help us put out Class A fires:
 - Surfactants
 - Emulsifiers
 - Foaming Agents
- List the three parts of the CAFS triangle:
- List the components of finished foam:
- How does CAFS differ from NAFS?

